

Building Community Capacity to Engage in the INEEL Water Integration Project

I. Project Goals, Objectives and Philosophy

The primary goals of the INEEL Water Integration Project are to:

- **Enhance scientific understanding of surface water, groundwater and contaminant movement at the INEEL.**
- **Improve the technical basis for making cleanup decisions**
- **Strengthen and better coordinate groundwater and vadose zone monitoring programs.**

In order to achieve these goals, the project team prepared a Stakeholder Involvement Plan in February 2002 in cooperation with a planning team of 14 stakeholders who represented a variety of interests. Five objectives were identified for public participation:

1. Better understand the values, attitudes and diversity of INEEL stakeholders and integrate discussion of these values into the project's decision making.
2. Ensure that responsive, two-way communications are maintained and that project information is readily accessible to interested citizens and organizations.
3. Involve stakeholders early in the process to ensure that project decisions benefit from the added value of public wisdom and perspective.
4. Involve the public in characterizing project-related problems and issues and in suggesting approaches to their resolution. The INEEL will clarify where stakeholder perspectives will be most influential in shaping project decisions.
5. Increase public understanding of the natural and institutional environment in which the project operates, including scientific and technical uncertainties. This dynamic arena includes the legal, regulatory, political and budgetary realities that are always subject to change.

In addition to these five objectives, the Plan cites three principles that were felt to be fundamental to the success of the Water Integration Project. These principles provide the philosophical basis for the Stakeholder Involvement Plan:

- *Strong stakeholder relationships will be essential to achieving the mission of the Water Integration Project*
- *Candid discussion of the nature and extent of subsurface contamination at the INEEL will be critical for cultivating public understanding of this issue.*
- *Greater public support of INEEL decisions will evolve from an open, credible decision-making process rather than an aggressive marketing approach.*

II. Rationale for Building Community Capacity on Aquifer-Related Topics

Experiential learning approaches are known to be most effective for helping the average person understand and retain information. Planning retreat stakeholders verified this observation with their fond recollections of field trips made to the INEEL in their youth. In order to achieve our objectives for engaging more local governments, citizen groups and interested individuals in the Water Integration Project, a well-conceived, experiential approach to aquifer education is needed.

A partial response to this need for on-site learning was our decision to offer our stakeholders a field tour of the INEEL focused on hydrogeology. The Water Integration Project designed the tour and produced an educational field guide that highlights the natural landscape and subsurface qualities of the Eastern Snake River Plain and discusses INEEL contamination within that context. The success of the first tours taken in September 2002 has encouraged us to explore how the broader public might gain a better understanding of complex subsurface issues at INEEL. Working with public school and university programs that already exist appears to be feasible.

This white paper outlines a multi-agency approach to designing and implementing public school and college curricula, instructional media, field experiences, and other “hands on” opportunities to engender a common understanding of the subsurface processes that operate beneath the Eastern Snake River Plain. Taken together, this suite of activities would constitute an “Aquifer Academy” that would focus the attention of all Idahoans on the precious groundwater resources underlying the Eastern Snake River Plain.

We propose that planning and fundraising for the Aquifer Academy would occur from January through September 2003. Development and testing of educational materials would require a full second year, with 2005 targeted for full program implementation. Three educational themes are proposed:

- How the Snake River Plain Aquifer was created and how it functions (geology, hydrology, contaminant fate and transport)
- How Idaho manages the aquifer to satisfy many beneficial uses (conjunctive management)
- How state and Federal agencies are working to monitor and protect Idaho’s groundwater quality (subsurface contamination challenges across Southern Idaho would be highlighted including INEEL’s past contamination).

Target audiences would be grouped into three categories:

- Students (middle and high school students, college students interested in basic geosciences)
- Educators (secondary school teachers and university professors)
- General Public (water users, elected officials, land use planning commissions, nonprofit organizations and interested citizens)

Shared funding approaches are proposed, with the INEEL Water Integration Project taking a leadership role in providing up front planning and development dollars through its Stakeholder Involvement Budget. Sponsorship funding would be sought through various foundation and agency sources that would help in implementing the proposed range of activities in 2005. An evaluation of all Academy activities is described in Section IV that will be essential for all funders and those interested in seeing these water education activities be self-sustaining.

III. Proposed Work Scope for the Aquifer Academy

Planning Phase – FY 2003

- Establish a Core Planning Team for the Aquifer Academy with 12-15 members and several ad hoc committees for specific areas of expertise. Members of the Planning Team and ad hoc committees will be recruited from the following agencies and interests:

Coordinating Entities

Jan Brown, INEEL Water Integration Project
Julie Scanlin, Water Education Coordinator, Idaho Water Resources Research Institute
Dr. Elda D. Zounar, INEEL Education and Research Initiatives
Deborah Hill, INEEL Research Communications

University Sector – Geohydrology, Ecology and Social Science Disciplines

Boise State University
University of Idaho
Idaho State University

Curriculum Specialists with Secondary Education Focus

Idaho Department of Education
Idaho Association for Environmental Education
National Office of Project WET located at Montana State University
Local Science Teachers

Relevant Agencies

U.S. Department of Energy
U.S. Bureau of Reclamation
U.S. Geological Survey
Idaho DEQ and/or Idaho Department of Water Resources
Resource Conservation and Development Districts (municipal governments)

Nonprofit/Public Interests

Idaho Water Education Foundation (irrigation & agricultural interests)
Craters of the Moon Natural History Association
Media representative

- Meet as a planning team three times during the planning phase to outline the proposed Academy components, schedule and timeline; identify possible funding sources; and assign final responsibilities. Planning sessions are suggested for February/March, May/June and August/September with team members volunteering their services and receiving travel reimbursements if requested. Ad hoc committees will be brought together as needed.
- Subcontract with the Idaho Water Resources Research Institute (University of Idaho) to provide independent coordination for the Aquifer Academy planning effort consistent with the Institute's current Project WET leadership responsibilities. A preliminary plan and budget for project implementation will be completed by June (to be used for FY 04 budget forecasts at INEEL) and a final plan would be issued in September 2003.

Development Phase – FY 2004

For Students

- Use a teacher's writing forum to draft "Aquifer Academy" public school curricula that meet Idaho Standards for middle and high school grades.
- Design and field test new Project WET investigations that would be included in a "Groundwater Education Supplement" for inclusion in the national/international curriculum
- Propose that "Know Your Aquifer" be the focus for Idaho's Water Awareness Week in May 2005
- Nominate to the Jason Project a "Journey through the Subsurface" for their 2004-05 theme.
- Develop basic aquifer course(s) to be offered as core curricula for students at Idaho colleges and universities

For Teachers

- Hold teacher in-service training to promote educational workshop opportunities and to prepare for '05 program implementation
- Design and field test groundwater study units that will expand current IWRRI Water Camp offerings for teachers
- Design and implement an evaluation/testing methodology for the newly developed curricula.

For the General Public

- Continue to refine the INEEL Hydrogeology Tour to meet the needs of various public audiences
- Develop an integrated public awareness/education program for 2005 that includes public TV programming, newspaper articles and a Twin Falls conference sponsored by the Andrus Center (perhaps in cooperation with the Craters of the Moon Natural History Association).
- Work with the various museums in Southern Idaho to develop and display traveling exhibits for 2005 appropriate to the aquifer education theme.
- Develop a "Speakers' Bureau" of qualified scientists and educators who can address civic organizations and other constituencies throughout 2005.

Implementation Phase – FY 2005

For Students

- Introduce Aquifer Academy units at the beginning of the school year (Fall 2004) and continue through May 2005 with age-appropriate lessons and activities.
- Broaden Water Awareness Week participation for the 2005 "Know Your Aquifer" emphasis
- Begin teaching the new core course(s) throughout Idaho's system of higher education
- Sponsor a major exhibit area on groundwater and vadose zone topics at the Science and Engineering Expo in the Fall of 2004.
- If accepted, engage in Jason Project activities that focus on Subsurface Science.

For Teachers

- Incorporate new aquifer modules into Project WET teacher workshops throughout the region
- Offer and critique the newly expanded summer Water Camps throughout Idaho

For the General Public

- Implement the public-oriented programs suggested above throughout FY05, with the public conference targeted for May 2005.
- Offer to the general public regularly scheduled INEEL Hydrogeology Tours from May through September 2005.

IV. Independent Evaluation and Future INEEL Involvement

A third-party evaluation plan for the Aquifer Academy should be designed so that objective information is collected, analyzed and published on the development process used and the final products received. The DOE/INEEL also should be interested in funding INRA social science research to measure public attitudes and understanding of groundwater quality issues before and after these educational events occur in 2005. The original premise that a better-informed public will lead to better decisions needs to be tested through a well-designed public participation process. The ideal opportunity should be the 2007 decision process on INEEL buried waste.

It is possible that following 2005 the public schools and institutions of higher learning will want to incorporate permanently the curricula and educational offerings developed under this project. Because the INEEL Water Integration Project is scheduled for completion in September 2005, it is recommended that INEEL Education and Research Initiatives and INEEL Communications be funded to continue their involvement with groundwater education programs.